AMENDMENTS TO THE CLAIMS:

Please cancel without prejudice claims 25, 27-34, 37, 38, 40-42, 44, 46-50, 53, 54 and 56 and amend claims 26, 35, 39, 43 and 45 as follows.

This listing of claims will replace all prior versions, and listings, of claims in the application:

1-25. (Cancelled)

26. *(Currently Amended)* A receiver front end ~~according to claim 25~~ for receiving electromagnetic wave signals having frequencies in the range of substantially 35GHz to substantially 40GHz, and having a gain of substantially 24dB or above and a noise figure of substantially 4dB or below, said receiver front end comprising at least one multifunction monolithic microwave integrated circuit (MMIC), ~~which has~~ said MMIC having a noise figure of substantially 4dB or below over an output signal frequency range of substantially 1 to 10GHz.

27-34. *(Cancelled)*

35. *(Currently amended)* A receiver front end for receiving electromagnetic wave signals having frequencies in the range of substantially 35GHz to substantially 40GHz, a gain of substantially 24dB or above, and a noise figure of substantially 4dB or below, said front end comprising:

(a) a receiver MMIC comprising a low noise amplifier (LNA) with a noise figure less than 4dB and a mixer for converting the frequency of a signal output from the LNA to a lower frequency mixer output signal; and

(b) a doubler/buffer amplifier MMIC,

wherein

(i) said LNA is a balanced amplifier having separate amplification sections;

(ii) each electromagnetic signal received by said LNA is split into two substantially symmetric signals, each of which is fed into said separate amplification sections; and

(iii) ~~according to claim 34 in which~~ said mixer comprises two diodes, ~~and~~ the signal from said LNA is fed into said diodes along with a reference signal and said diodes are adapted to multiply the signal from said LNA and said reference signal and ~~output~~provide an output signal having a frequency equal to the difference in frequency of the signal from said LNA and the frequency of said reference signal.

36. *(Previously presented)* A receiver front end according to claim 35 wherein said mixer is a 90° balanced mixer.

37-38. *(Cancelled).*

39. *(Currently amended)* A receiver front end for receiving electromagnetic wave signals having frequencies in the range of substantially 35GHz to substantially 40GHz, a

gain of substantially 24dB or above, and a noise figure of substantially 4dB or below, said front end comprising:

(a) a receiver MMIC comprising a low noise amplifier (LNA) with a noise figure less than 4dB and a mixer for converting the frequency of a signal output from the LNA to a lower frequency mixer output signal; and

(b) a doubler/buffer amplifier MMIC,

wherein

(i) said LNA is a balanced amplifier having separate amplification sections;

(ii) each electromagnetic signal received by said LNA is split into two substantially symmetric signals, each of which is fed into said separate amplification sections; and

(iii) ~~according to claim 31~~ wherein said receiver MMIC comprises an IF amplifier~~,~~ ~~and the IF amplifier is adapted to receive~~ for receiving and amplifying an IF output signal from said mixer and ~~to amplify it to produce~~producing an IF output signal which is output from said receiver MMIC, and wherein said amplifier comprises a single transistor stage having gate and drain terminals, and in which a parallel resistor-inductor-capacitor feedback network is applied between said gate and drain terminals of said transistor.

40-42. *(Cancelled)*

43. *(Currently amended)* A receiver front end package ~~according to claim 42~~comprising:

(i) an electromagnetic wave receiver front end for receiving electromagnetic wave signals having frequencies in the range of substantially 35GHz to substantially 40GHz, and having a gain of substantially 24dB or above and a noise figure of substantially 4dB or below, said receiver front end comprising at least one multifunction monolithic microwave integrated circuit (MMIC);

(ii) power supply components for said receiver front end; and

(iii) connectors for said receiver and said power supply components,

~~which~~wherein said package is double sided with separate enclosures and provides isolation of said electromagnetic wave receiver front end and said power supply components into the separate enclosures, and in which connections are made between said receiver front end and said power supply components using glass bead feedthroughs in said package.

44. *(Cancelled)*

45. *(Currently amended)* A receiver front end package ~~according to claim 44~~comprising:

(i) an electromagnetic wave receiver front end for receiving electromagnetic wave signals having frequencies in the range of substantially 35GHz to substantially 40GHz, and having a gain of substantially 24dB or above and a noise figure of substantially 4dB

or below, and comprising at least one multifunction monolithic microwave integrated circuit (MMIC);

(ii) power supply components for said receiver front end; and

(iii) connectors for said receiver and said power supply components,

wherein said power supply components comprise DC biasing circuits on a circuit board, said biasing circuits containing bias sequencing and voltage regulation for all of the bias lines of said receiver front end, and ~~A receiver front end package according to claim 44~~

wherein said connectors are connected to the receiver front end using an airline launch technique with a better than 20dB impedance match of said connectors with said receiver front end.

46-50. *(Cancelled).*

51. *(Previously presented)* A receiver front end comprising:

i) a first amplifier adapted to amplify a received signal and provide an amplified signal;

ii) a filter adapted to filter said amplified signal and provide a filtered signal;

iii) a mixer adapted to take a reference signal and said filtered signal and mix them such that said mixer provides an output in a frequency range different from that of said filtered signal, so as to provide a mixed signal;

iv) a second amplifier adapted to amplify said mixed signal; and

wherein the first amplifier comprises:

a) a first Lange coupler adapted to split the signal in first and second signals such that said first and second signals have substantially 90° phase difference;

b) a first amplification section adapted to amplify said first signal and a second amplification section adapted to amplify said second signal, said first and second amplification sections having balanced topographies, each section having first, second and third transistors and a gate and a drain bias for said transistors, said gate and drain biases being common to all the transistors; shunt resistors associated with the gate of each transistor; a series resistor-inductor-capacitor network in parallel with said section; and parallel feedback being provided across said third transistor; and

c) said first and second stages having respective outputs, and a further Lange coupler being provided so as to combine said outputs of said amplification sections.

52. *(Previously presented)* A receiver front end comprising:

i) a first amplifier adapted to amplify a received signal and provide an amplified signal;

ii) a filter adapted to filter said amplified signal and provide a filtered signal;

iii) a mixer adapted to take a reference signal and said filtered signal and mix them such that said mixer provides an output in a frequency range different from that of said filtered signal, so as to provide a mixed signal;

iv) a second amplifier adapted to amplify said mixed signal; and

wherein said mixer comprises:

a) a Lange coupler arranged such that both said reference signal and said filtered signal are added together and then separated into first and second signals with a phase difference of substantially 90°; and

b) first and second diodes, each supplied with one of said phase separated first and second signals, said first and second diodes being arranged such that said first diode is in one orientation with respect to said first input signal and said second diode is in the opposite orientation with respect to said second signal;

and arranged such that a combined output signal of said first and second diodes has a frequency substantially equal to the difference between said reference and filtered signals.

53-54. *(Cancelled).*

55. *(Previously presented)* A receiver front end comprising:

i) a first amplifier adapted to amplify a received signal and provide an amplified signal;

ii) a filter adapted to filter said amplified signal and provide a filtered signal;

iii) a mixer adapted to take a reference signal and said filtered signal and mix them such that said mixer provides an output in a frequency range different from that of said filtered signal, so as to provide a mixed signal;

iv) a second amplifier adapted to amplify said mixed signal; and

wherein said second amplifier has an output impedance and comprises a single transistor having a gate and a drain bias, a resistor-inductor-capacitor network provided between gate and drain terminals of said transistor and a resistor-capacitor network adapted to match said input impedance of the second amplifier to that required by said mixer for proper operation thereof.

56. *(Cancelled)*

57. *(Previously presented)* A receiver front end comprising:

i) a first amplifier adapted to amplify a received signal and provide an amplified signal;

ii) a filter adapted to filter said amplified signal and provide a filtered signal;

iii) a mixer adapted to take a reference signal and said filtered signal and mix them such that said mixer provides an output in a frequency range different from that of said filtered signal, so as to provide a mixed signal;

iv) a second amplifier adapted to amplify said mixed signal; and

wherein the first amplifier comprises:

a) a first Lange coupler adapted to split the signal in first and second signals such that said first and second signals have substantially 90° phase difference;

b) a first amplification section adapted to amplify said first signal and a second amplification section adapted to amplify said second signal, said first and second

amplification sections having balanced topographies, each section having first, second and third transistors and a gate and a drain bias for said transistors, said gate and drain biases being common to all the transistors; shunt resistors associated with the gate of each transistor; a series resistor-inductor-capacitor network in parallel with said section, and parallel feedback being provided across said third transistor; and

c) said first and second stages having respective outputs, and a further Lange coupler being provided so as to combine said outputs of said amplification sections; and

wherein said mixer comprises:

a) a Lange coupler arranged such that both said reference signal and said filtered signal are added together and then separated into first and second signals with a phase difference of substantially 90°; and

b) first and second diodes, each supplied with one of said phase separated first and second signals, said first and second diodes being arranged such that said first diode is in one orientation with respect to said first input signal and said second diode is in the opposite orientation with respect to said second signal;

and arranged such that a combined output signal of said first and second diodes has a frequency substantially equal to the difference between said reference and filtered signals; and

wherein said filter is a distributed transmission line filter, arranged in a serpentine fashion, containing quarter wave coupled elements, said filter being adapted to suppress a sideband of the output of said first amplifier;

wherein said second amplifier has an output impedance and comprises a single transistor having a gate and a drain bias, a resistor-inductor-capacitor network provided between gate and drain terminals of said transistor and a resistor-capacitor network adapted to match said input impedance of the second amplifier to that required by said mixer for proper operation thereof; and

wherein said reference signal is generated by means of a local oscillator, the output of which is sued to supply a frequency doubler, the output of said doubler being passed through an amplifier before being used as said reference signal.